



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,568	12/12/2003	Satoshi Kojima	03500.017762.	8616
5514 7590 08/06/2007 FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112				
			EXAMINER DOTE, JANIS L	
			ART UNIT 1756	PAPER NUMBER
			MAIL DATE 08/06/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/733,568

Applicant(s)

KOJIMA ET AL.

Examiner

Janis L. Dote

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-11 and 13-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5-9 and 17 is/are rejected.
- 7) ☒ Claim(s) 2, 10, 11, 13-16 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2007 and 23 May 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1756

1. This office action is responsive to the responses to the *Ex parte Quayle* action mailed on Dec. 20, 2006 ("*Quayle* action"), filed on Feb. 22, 2007, May 23, 2007, and on Jun. 27, 2007.

The examiner acknowledges the cancellation of claims 19 and 21 and the amendment to claim 10 filed on Feb. 22, 2007. Claims 1-3, 5-11, and 13-18 are pending.

2. The replacement drawing sheets filed on May 23, 2007, and Jun. 27, 2007, are acceptable.

3. The indicated allowability of claims 1, 3, 5-9, and 17 is withdrawn in view of the newly discovered reference(s) to US 5,849,455 (Ueda). Rejections based on the newly cited reference(s) follow.

4. The objections to the specification under 35 U.S.C. 132 regarding the amended paragraphs beginning at page 34, lines 6, 20, and 26, at page 35, line 17, and at page 36, line 5, of the specification, filed on Feb. 22, 2007, set forth in the non-responsive notice mailed on Apr. 23, 2007, item (2), to the *Quayle* action, have been withdrawn in response to amended

paragraphs at pages 34-36 of the specification, filed on Jun. 27, 2007.

The objection to the drawings set forth in the *Quayle* action, paragraphs 7 and 8, have been withdrawn in response to the amended paragraph beginning at page 4, line 6, of the specification, filed on Feb. 22, 2007, and in response to the replacement drawings sheets filed on May 23, 2007, and Jun. 27, 2007.

The objections to the specification set forth in the *Quayle* action, paragraph 10, have been withdrawn in response to applicants' comments in the response filed on Feb. 22, 2007, page 11, last full paragraph, and in response to the amendment to claim 10 and the cancellation of claims 19 and 21 filed on Feb. 22, 2007.

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1, 3, 5-7, 9, and 17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 5,849,455 (Ueda), as evidenced by applicants' admissions at page 6, line 15, to page 7,

line 25, and page 9, lines 13-15, of the instant specification (applicants' admission I).

Ueda discloses electrophotographic photosensitive members comprising a conductive support, a lower charge injection-inhibiting layer (another name for a blocking layer) 702, photoconductive layer 703 and a surface layer 704. Fig. 7B; col. 12, lines 22-54; and example 14 at col. 24 and in Table 5 at col. 23. The photoconductive layer 703 comprises a charge transporting layer 706 and a charge generating layer 705. The charge transporting layer and the charge generating layer comprise amorphous material having silicon atoms as its base, which meets the photoconductive layer compositional limitation recited instant claims 1 and 9. See Table 5. The charge transporting layer and the charge generating layer have thicknesses of 15 and 5 μm , respectively. Both layer thicknesses are within the layer thickness range of 3 to 15 μm recited in instant claims 1 and 9. Accordingly, the photosensitive members meet the layer structure recited in instant claims 1 and 5-7. The total thickness of the photoconductive layer, i.e., 20 μm , is within the photoconductive layer thickness of 10 to 60 μm recited in instant claim 3.

According to Ueda, the photosensitive members in example 14

Art Unit: 1756

are produced using the apparatus shown in Fig. 2. A plasma CVD process forms the layers in the photosensitive members. The process comprises the steps of introducing a source gas into a chamber, introducing a discharge frequency of 105 MHz between the conductive substrate as a first electrode provided in the chamber and a second electrode opposing, and applying an AC voltage of 100, 300, or 600 V to the substrate, thereby decomposing the source gas and film-depositing the desired layer on the surface of the conductive substrate. The steps of the process are repeated for each of the layers in the photosensitive members. The waveform of the AC voltage is a sine wave having a frequency of 500 Hz. Col. 7, lines 22-48; col. 8, lines 11-17; and example 14. According to Ueda, no spherical protrusions, i.e., protuberances, of 20 μm or greater were observed on the photosensitive members surface by microscopic observation. Col. 24, lines 25-29.

Ueda teaches that one of the causes of image defects, e.g., white dots, on a solid black image "is considered to be foreign matters of a size of several to several tens of microns existing on the surface of the substrate or of a depositing film, the foreign matters functioning as nuclei for growth of the film to cause abnormal growth (formation of spherical protrusions) in a column shape or inverted cone shape toward the deposition film

Art Unit: 1756

surface." Col. 4, lines 3-11. According to Ueda, the spherical protrusions and white dots are presumed to be formed by the following mechanism. "Foreign matters, such as burrs, scratches, chips and dusts, if present on the surface of the substrate or the depositing film, will change the potential of the plasma locally at the sites of the foreign matters, which can change the active species formed in, or transported to the surrounding plasma space, or can prevent the movement of the active species on the surface, thereby changing the surface reaction for film deposition. As a result, the portions of the deposition film formed on and around the foreign matter nuclei have properties different from the normal portions, and have unsatisfactory film properties electrophotographically . . ."

Col. 4, lines 10-21. According to Ueda, its film-forming deposition process applies sufficient power throughout the discharge space by applying a DC and/or AC voltage to maintain the surface potential uniformly in the axis direction of the substrate, which prevents the localization of the electric field onto the foreign matters such as burrs, scratches, chips, and dusts, which prevents the uneven distribution of plasma. Ueda teaches that this is effective to decrease image defects, e.g., spherical protrusions. Col. 6, lines 42-67.

Ueda does not explicitly disclose that the protrusions on

Art Unit: 1756

the surface of the charge transporting layer, i.e., layer region (A), have been stopped as recited in instant claim 1. Nor does Ueda disclose that its method of making the photosensitive member stops protuberances from growing at the surface of the second photoconductive layer. The instant specification discloses that the photosensitive member recited in instant claim 1 made by the process recited in instant claim 9 can reduce the number of image defects without adversely affecting any electrical properties. Instant specification, page 6, line 15, to page 7, line 25; and page 9, lines 13-15. As discussed above, Ueda teaches a method that reduces the number of spherical protrusions on the surface of the photosensitive member surface. In addition, according to Ueda, its photosensitive members have excellent electrophotographic properties "without variation in the axis direction" as in Example 5. Col. 24, lines 20-24. In example 5 at col. 19, "the photosensitive members had excellent electrophotographic properties with uniform potential distribution, and formed excellent images with uniform density. No image defects such as white dots were observed." Col. 19, lines 53-58. Thus, because the method disclosed by Ueda produces photosensitive members that reduces the number of spherical protrusions on the surface of the members, it is reasonable to presume that the

"protuberances" on the surface of the charge transporting layer in the resultant photosensitive members disclosed by Ueda are stopped from growing at the surface of said layer as recited in instant claim 1 and that the Ueda method stops the growth of the surface "protuberances" on the surface of the Ueda charge transporting layer as recited in instant claim 9. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda combined with US 2002/0018949 A1 (Ehara).

Ueda discloses electrophotographic photosensitive members as described in paragraph 6 above, which is incorporated herein by reference.

Ueda does not exemplify a photosensitive member comprising an upper blocking layer and a surface layer superposing formed on the photoconductive layer as recited in instant claim 8.

However, Ueda does not limit its photosensitive members to comprise only the layers shown in Figure 7B, namely, a charge injection-inhibiting layer (another name for a blocking layer) 702, a photoconductive layer 703 comprising a charge transporting layer 706 and a charge generating layer 705, and a surface layer 704. Ueda teaches that its film-depositing

process may form other layers in the photosensitive member.

Col. 10, lines 62-67.

Ehara teaches that amorphous silicon containing photosensitive members may further comprise, in addition to a lower blocking layer 104, an upper blocking 107 between the photoconductive layer 102 and the surface layer 103. See Fig. 7B and paragraph 0076. According to Ehara, "by providing a lower blocking layer 104 and an upper blocking layer 107 . . . and selecting as their dopants an element of Group 13 of the Periodic Table, Group 15 of the Periodic Table and so forth, it becomes possible to control the polarity of charge to achieve positive charging or negative charging." Paragraph 0076. Ehara further teaches that elements of Group 13 include boron for positive charging. Paragraph 0077. In example 14 of Ueda, the lower charge injection-inhibiting layer comprises boron atoms. See Ueda, Table 5.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Ueda and Ehara, to incorporate an upper blocking layer comprising a boron dopant between the photoconductive layer and the surface layer in the photosensitive members in example 14 of Ueda. That person would have had a reasonable expectation of successfully obtaining positive charging electrophotographic photosensitive members

Art Unit: 1756

that have the benefits disclosed by Ueda.

8. Claims 2, 10, 11, 13-16, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record, namely Ueda, does not teach or suggest the process steps recited in instant claims 10, 11, 13-16, and 18. Nor does Ueda teach or suggest a photosensitive member where at the surface of a layer region of the photoconductive layer, "protuberances of 15 μm or more each in major axis are in a number of 5 or less per 100 cm^2 ." Nor is there enough evidence on the present record to reasonably presume that the surface of a layer region of the photoconductive layers in the Ueda photosensitive members have the density of protuberances (or protrusions) of 15 μm or more as recited in instant claim 2.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1756

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

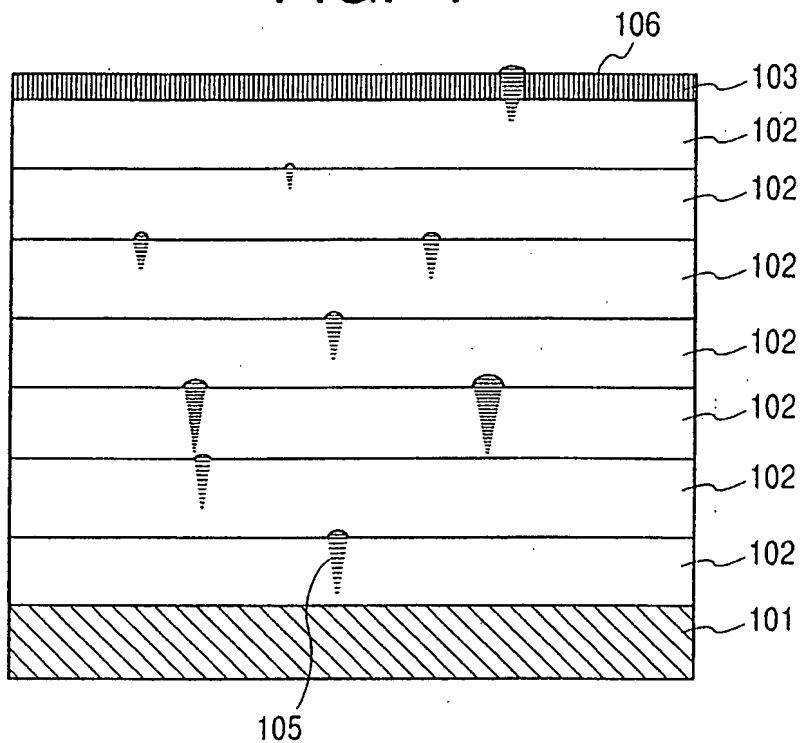
Janis L. Dote
JANIS L. DOTE
PRIMARY EXAMINER
GROUP 1500-
1700

JLD

Jul. 31, 2007

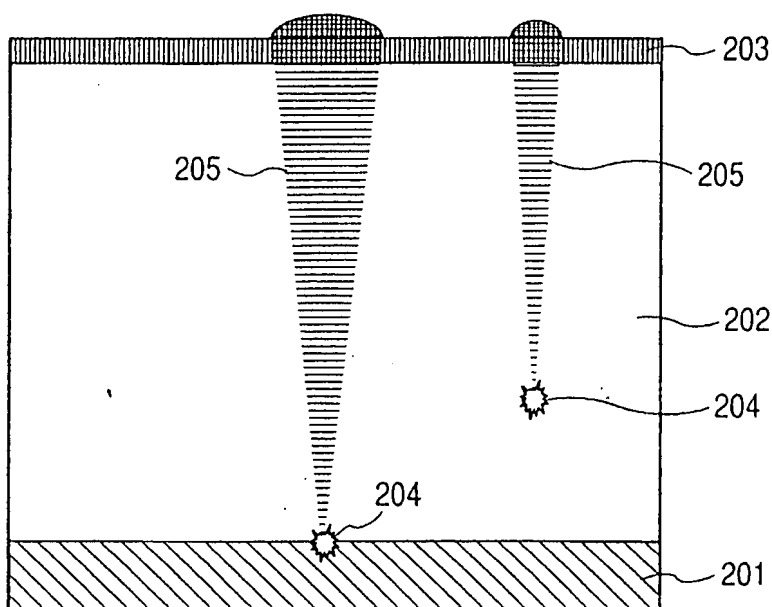
REPLACEMENT SHEET

FIG. 1



OK to enter
acceptable
of date
5/31/07

FIG. 2 (PRIOR ART)

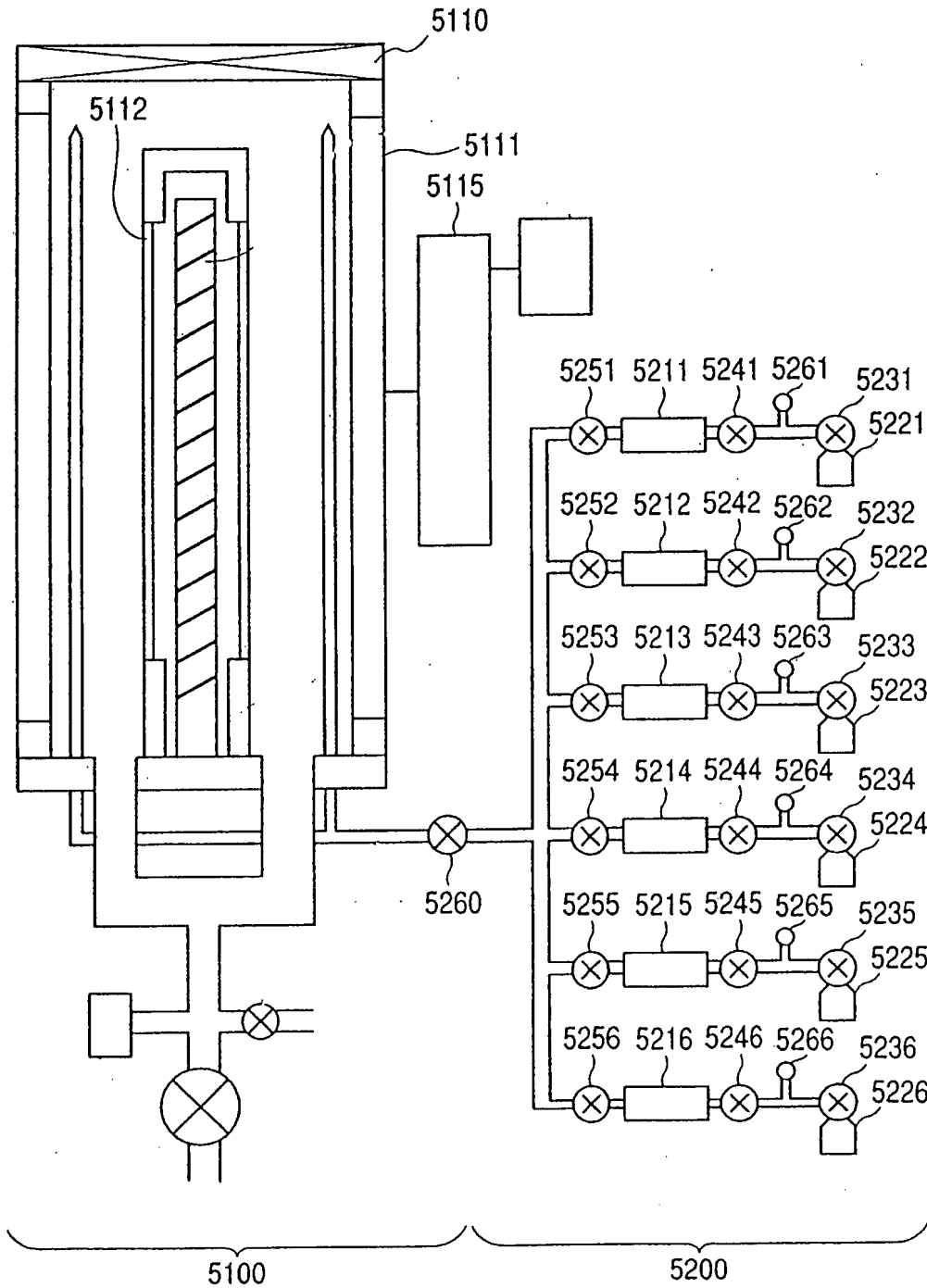


filed 6/27/07

REPLACEMENT SHEET

3/6

FIG. 5



OK to enter
7/31/07
J. D. D.